IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method for detecting an endpoint of a process in a plasma processing system comprising:

starting said process in a process chamber;

measuring at least one endpoint signal;

generating at least one filtered endpoint signal by applying a Savitsky Golay filter to said at least one endpoint signal; and

determining an endpoint of said process from said at least one filtered endpoint signal,

wherein said at least one filtered endpoint signal comprises a first filtered endpoint signal corresponding to a first chemical constituent found in the process chamber and a second filtered endpoint signal corresponding to a second chemical constituent found in the process chamber, and

said endpoint is determined from a ratio signal, said ratio signal generated by a ratio of said first filtered endpoint signal and said second filtered endpoint signal.

Claim 2 (Original): The method as recited in claim 1, wherein said at least one filtered endpoint signal comprises a smoothed endpoint signal.

Claim 3 (Original): The method as recited in claim 1, wherein said at least one filtered endpoint signal comprises at least one of a smoothed first derivative of said at least one endpoint signal, and a smoothed second derivative of said at least one endpoint signal.

Claim 4 (Original): The method as recited in claim 1, wherein said at least one filtered endpoint signal comprises an endpoint transition.

Claim 5 (Original): The method as recited in claim 4, wherein said determining said endpoint from said at least one filtered endpoint signal comprises using at least one of a start time of said endpoint transition, an end time of said endpoint transition, and an inflection time of said endpoint transition.

Claim 6 (Original): The method as recited in claim 1, wherein said at least one endpoint signal comprises an optical signal from said plasma processing system.

Claim 7 (Original): The method as recited in claim 6, wherein said optical signal is related to a spectral irradiance of emitted light from said plasma processing system.

Claim 8 (Original): The method as recited in claim 6, wherein said optical signal is measured using an optical diagnostic subsystem, said optical diagnostic subsystem comprising at least one of a detector, an optical filter, a grating, a prism, a monochromator, a spectrometer, a CCD array, and a CID array.

Claims 9-10 (Cancelled).

Claim 11 (Original): The method as recited in claim 10, wherein said endpoint is determined from a differential signal, said differential signal comprising at least one of a first derivative, and a second derivative of said ratio signal.

Claim 12 (Original): The method as recited in claim 1, wherein said applying said Savitsky Golay filter comprises setting a filter window width and a polynomial order.

Claim 13 (Currently Amended): A method for detecting an endpoint of a process comprising:

starting said process in a process chamber;

measuring a first endpoint signal corresponding to a first chemical constituent found in the process chamber;

measuring a second endpoint signal corresponding to a second chemical constituent found in the process chamber;

determining a ratio signal from a ratio of said first endpoint signal and said second endpoint signal, said ratio signal comprises an endpoint transition;

determining a differential signal from said ratio signal by applying a differential filter to said ratio signal, wherein said differential filter comprises a Savitsky Golay filter; and

determining an endpoint of said process from said differential signal.

Claim 14 (Original): The method as recited in claim 13, wherein said measuring said first endpoint signal further comprises filtering said first endpoint signal, said filtering comprising at least one of a moving average, a finite impulse response filter, and a Savitsky Golay filter.

Claim 15 (Original): The method as recited in claim 14, wherein said measuring said second endpoint signal further comprises filtering said second endpoint signal, said filtering comprising at least one of a moving average, a finite impulse response filter, and a Savitsky Golay filter.

Claim 16 (Original): The method as recited in claim 13, wherein each of said first endpoint signal and said second endpoint signal comprise an optical signal from a plasma process.

Claim 17 (Original): The method as recited in claim 16, wherein each of said optical signal is related to a spectral irradiance of emitted light from said plasma process.

Claim 18 (Original): The method as recited in claim 16, wherein said optical signal is measured using an optical diagnostic subsystem, said optical diagnostic subsystem comprising at least one of a detector, an optical filter, a grating, a prism, a monochromator, a spectrometer, a CCD array, and a CID array.

Claim 19 (Original): The method as recited in claim 13, wherein said applying said differential filter comprises setting a filter window width and a polynomial order.

Claim 20 (Original): The method as recited in claim 13, wherein said differential signal comprises at least one of a first derivative of said ratio signal and a second derivative of said ratio signal.

Claim 21 (Original): The method as recited in claim 13, wherein said determining said endpoint comprises using at least one of a start time of said endpoint transition, an end time of said endpoint transition, and an inflection time of said endpoint transition.

Claim 22 (Currently Amended): A plasma processing system comprising: a process chamber; a diagnostic system coupled to said process chamber and configured to measure at least one endpoint signal; and a controller coupled to said diagnostic system, configured to filter said at least one endpoint signal using a Savitsky Golay filter, and configured to determine an endpoint from the filtered endpoint signal,

wherein said at least one filtered endpoint signal comprises a first filtered endpoint signal corresponding to a first chemical constituent found in the process chamber and a second filtered endpoint signal corresponding to a second chemical constituent found in the process chamber, and

said controller is configure to determine said endpoint from a ratio signal, said ratio signal generated by a ratio of said first filtered endpoint signal and said second filtered endpoint signal.

Claim 23 (Original): The plasma processing system as recited in claim 22, wherein said diagnostic system comprises an optical diagnostic subsystem.

Claim 24 (Original): The plasma processing system as recited in claim 23, wherein said optical diagnostic subsystem comprises at least one of a detector, an optical filter, a grating, a prism, a monochromator, a spectrometer, a CCD array, and a CID array.

Claim 25 (Original): The plasma processing system as recited in claim 22, wherein said at least one endpoint signal comprises an endpoint transition.

Claim 26 (Original): The plasma processing system as recited in claim 25, wherein said controller is further configured to determine said endpoint from said at least one filtered

endpoint signal using at least one of a start time of said endpoint transition, an end time of said endpoint transition, and an inflection time of said endpoint transition.

Claims 27-28 (Cancelled).

Claim 29 (Original): The plasma processing system as recited in claim 28, wherein said controller is configure to determine said endpoint from a differential signal, said differential signal comprising at least one of a first derivative, and a second derivative of said ratio signal.

Claim 30 (Original): The plasma processing system as recited in claim 22, wherein said Savitsky Golay filter comprises a filter window width and a polynomial order.

Claim 31 (New): The method as recited in claim 1, wherein the first filtered endpoint signal corresponds to an emission intensity of light at a first wavelength corresponding to the first chemical constituent found in the process chamber, and

the second filtered endpoint signal corresponds to an emission intensity of light at a second wavelength corresponding to the second chemical constituent found in the process chamber.

Claim 32 (New): The method as recited in claim 31, wherein each wavelength is measured using optical emission spectroscopy.

Claim 33 (New): The method as recited in claim 31, wherein the first filtered signal corresponds to a first chemical constituent whose concentration decays during endpoint, and

the second filter signal corresponds to a second chemical constituent whose concentration rises during endpoint.

Claim 34 (New): The method as recited in claim 13, wherein the first filtered endpoint signal corresponds to an emission intensity of light at a first wavelength corresponding to the first chemical constituent found in the process chamber, and

the second filtered endpoint signal corresponds to an emission intensity of light at a second wavelength corresponding to the second chemical constituent found in the process chamber.

Claim 35 (New): The method as recited in claim 34, wherein each wavelength is measured using optical emission spectroscopy.

Claim 36 (New): The method as recited in claim 34, wherein the first filtered signal corresponds to a first chemical constituent whose concentration decays during endpoint, and

the second filter signal corresponds to a second chemical constituent whose concentration rises during endpoint.

Claim 37 (New): The system as recited in claim 22, wherein the first filtered endpoint signal corresponds to an emission intensity of light at a first wavelength corresponding to the first chemical constituent found in the process chamber, and

the second filtered endpoint signal corresponds to an emission intensity of light at a second wavelength corresponding to the second chemical constituent found in the process chamber.

Claim 38 (New): The system as recited in claim 37, wherein each wavelength is measured using optical emission spectroscopy.

Claim 39 (New): The system as recited in claim 37, wherein the first filtered signal corresponds to a first chemical constituent whose concentration decays during endpoint, and the second filter signal corresponds to a second chemical constituent whose concentration rises during endpoint.